

What is claimed is:

1. A method for detecting objects buried beneath a surface of a medium, the method comprising:
 - a. providing a plurality of antennas coupled into an array, each antenna characterized by a feed;
 - b. drawing the plurality of antennas across the surface;
 - c. radiating a plurality of transmitted pulses of electromagnetic radiation at periodic intervals of time;
 - d. receiving the plurality of pulses in the array of antennas after interaction with the medium;
 - e. forming pulses synchronous with the transmitted pulses by means of a pulse former disposed at the feed of each antenna;
 - f. sampling the plurality of pulses by a sampling circuit, the sampling circuit disposed at the feed of each antenna so as to create an equivalent-time pulse signal; and
 - g. subtracting a self-signature of each antenna from the equivalent-time pulse signal so as to detect features of objects buried beneath the surface of the medium.
2. A method in accordance with claim 1, wherein providing a plurality of antennas includes stacking low-radar cross-section members.
3. A method in accordance with claim 2, wherein stacking low-radar cross-section members includes stacking plastic sheets.
4. A method in accordance with claim 1, wherein providing a plurality of antennas includes adhering plastic sheets to high-strength structural members.
5. A method in accordance with claim 1, wherein sampling the plurality of pulse includes disposing only the pulse former, a receiving diode, an integrating capacitor, and an impedance converter at the feed of each antenna.
6. A method for manufacturing a broadband antenna, the method comprising:

- a. depositing a conductive film along a dielectric member in such a manner that the impedance of the conducting film is a continuous function of length along the dielectric member; and
 - b. electrically coupling a sampling circuit to the conducting film at a feedpoint of the broadband antenna.
- 7.** A method in accordance with claim 6, wherein the step of depositing a conductive film includes sputtering a resistive layer of a conducting metal.
- 8.** A receiver for an impulse radar system characterized by a strobe pulse, the receiver comprising:
- a. a broadband antenna having a feed;
 - b. a low-radar cross-section front-end module coupled directly to the feed of the antenna, the front-end module including only a receiving diode, an integrating element, and a impedance matching element;
 - c. an input for coupling the strobe pulse to the receiving diode;
 - d. a transmission line having a proximal end coupled to the front-end module and a distal end; and
 - e. a processor coupled to the distal end of the transmission line for analyzing signals received from the front end module.
- 9.** A receiver in accordance with claim 8, wherein the integrating element is a capacitor.
- 10.** A receiver in accordance with claim 8, wherein the broadband antenna is characterized by a resistivity per-unit-length, and wherein the resistivity per-unit-length increases with distance from the feed.
- 11.** A receiver in accordance with claim 10, wherein the resistivity per-unit-length increases linearly with distance from the feed.